

ENGINEERING INVENTIONS.

A railroad tie has been patented by Mr. William H. Knowlton, of Pottsville, Pa. This invention relates to a metallic tie of special construction, the form of which may be considerably varied, and which may be rolled in iron, steel, or other malleable metal, or cast.

A pile driver has been patented by Mr. Joseph W. Putnam, of New Orleans, La. It is of that class of pile drivers used for railway building, and therefore mounted on a truck or platform car, being so constructed and arranged that a pile may be readily driven vertically or obliquely, a pivoted platform being combined with hinged leaders connected by a double joint with a triangular iron frame, with various other novel features.

AGRICULTURAL INVENTIONS.

A cultivator has been patented by Messrs. Oliver S. Presbrey and Aaron Nall, of Moriah, N. Y. The teeth are attachable as desired, and are so held to their work by a clamp that they will yield on striking a large stone or other obstacle, and thus prevent breaking; they may also be so arranged in a group as to form a shovel plow.

A wheel cultivator has been patented by Mr. William P. Brown, of Zanesville, O. This invention relates to a former patented invention of the same inventor, in which the plow beams were provided with a resilient flexible joint, and with a lifting spring and draught connection that tended to draw the plows into the ground, and covers a further development of the idea and improvement in the construction.

MISCELLANEOUS INVENTIONS.

A camera stand has been patented by Mr. William H. Lewis, of New York City. This invention relates to improvements in portable tripod stands, and covers certain features of construction of the folding legs and means for retaining them in connection with the top or base that receives the camera.

A combined grain separator and smut-ter has been patented by Mr. Harry L. Martin, of Lancaster, Pa. This invention covers a novel construction and arrangement of parts for a machine to facilitate the cleaning of wheat and other grain, and promote thoroughness in such cleaning.

A folding barrel has been patented by Mr. George F. Knapp, of St. Louis, Mo. This invention provides means whereby the center of the barrel may be securely held while either end is adapted to be opened to examine the contents, and so the hoops may be locked securely or readily unlocked.

A feeding device for carding machines has been patented by Mr. Ernst Gessner, of Aue, Saxony, Germany. This invention provides a device for taking away or feeding regularly and evenly, from a receptacle or bulk box, wool or other fibrous material, carrying it forward to some desired place, or delivering it to another machine, in even amounts.

A rubber stamp hand printing machine has been patented by Mr. Robert Gaiger, of West Hoboken, N. J. It is made with end plates slotted to receive an inking roller, and connected by a socket bar with one or more spring-supported plungers carrying the stamp, and operated by cams with which are connected slotted arms carrying the inking roller.

A stock feeder has been patented by Mr. Elias R. Harman, of Lincoln, Neb. This invention covers a special construction and arrangement of parts for a stock feeder which shall have a separate trough for each animal, and so that all the troughs can be filled uniformly and rapidly, the troughs being easily kept clean.

A sheep stock has been patented by Mr. Francis M. Swartz, of Jacksontown, O. The construction is such that the weight of the sheep pulls on straps and causes hinged side boards to so close down upon him as to make him hold himself, when necessary, for tagging or other purposes, and so that if he struggles he will only be held the more closely.

A machine for sawing stone has been patented by Mr. Valentine G. Barney, of Charles City, Iowa. This invention covers improvements on a former patented invention of the same inventor, the improvements especially relating to devices for feeding the sand and water mixture upon the block of marble or stone, and devices for mixing the sand and water.

A clip for vehicle axles has been patented by Mr. Edmund N. Hatcher, of Columbus, O. The body or strap portion of the clip is of sheet metal of suitable thickness, and of a size to serve as a hood to exclude water and dirt from under the skein body, and to sustain the collar band against endwise pressure, the bolts for the clip bar being welded to the body, and the device forming a combined hood and clip.

A machine for heading bolts has been patented by Mr. John Stackler, of West Winsted, Conn. It is a bolt-making machine with devices for upsetting the wires and forming the head in one heat, and for automatically pressing and pinching together the dies for holding the wire while it is being upset, for separating the dies afterward, and pushing out the completed bolt.

A shield for scarfs has been patented by Mr. Gustave Selowsky, of New York City. The shield has a raised central portion on its inner face, this portion being integral with the body of the shield, and having a button hole with a metal lining, so the shield can be used with buttons with different sized heads, and will adapt itself to the varying distance between the button and the top of the collar band.

A cooking stove has been patented by Mr. Charles F. Hanneman, of Ahnapee, Wis. This invention relates to baking ovens with a vertically adjustable bottom plate, and means for admitting steam into the oven, and provides improved arrangements for raising and lowering the oven plate, and improved construction of the steam generator and discharger, making an oven specially adapted for baking bread in the most perfect manner.

A sealskin sack, dolman, and ulster block has been patented by Messrs. Phillip Weinberg, Louis Clark, Jr., and Egbert Winkler, of New York City. It is made with three or more boards secured to each other at their adjacent edges and attached at their ends to end boards, the adjacent edges of two or more of the boards being tapered, with other features, to facilitate the working of the skin as the edges are successively tacked to the block as the work progresses.

A vehicle shaft has been patented by Messrs. John Scott and Amos S. Scott, of Caln Township, Pa. It provides for three horses being hitched on shafts usually arranged for one horse, two thills having a triple tree pivoted on a cross piece of the same, a single tree on the middle and one on each end of the triple tree, and there being straps passed around the ends of the double tree and through loops on the sides of the thills.

A sectional non-conductive covering for tubes has been patented by Mr. William M. Suhr, of New York City. It is formed of two semi-cylinders of plaster of Paris, asbestos, and sawdust, covered on the outside with a layer of felt, which in turn is covered by a layer of thick paper, the covering being formed in sections and delivered dry and hardened ready for application, so a large quantity of pipe can easily be covered in a short time.

A sand and water pump has been patented by Mr. Valentine G. Barney, of Charles City, Iowa. The pump cylinder has a piston fitting closely at its upper end and loosely at the lower end, the piston having a series of apertures extending from the top to the loosely fitting part, to conduct water through the piston into the cylinder to form a sleeve of water around that part of the piston fitting loosely in the cylinder, to prevent wear of the piston.

A panel raising machine has been patented by Mr. Julius Lobnitz, of Madisonville, O. This invention covers improvements in contrivances for mounting, adjusting, and operating the cutter heads, also improvements in the cutters, in the table, and in the contrivance of the chip breaker and the gauges for controlling the work, the advantages being, among other things, to lessen the power required and make smoother work.

A door or window screen has been patented by Mr. Obadiah G. Newton, of Trenton, Mo. Netting is secured to the inside of the frame, and grooves are formed in the netting, in the bottom of which grooves are apertures through which the flies can escape, triangular blocks being placed in the ends of the grooves and in recesses in the frame, to make it easy for flies to escape from a room, but difficult for them to enter.

A mechanism for converting motion has been patented by Mr. Jethro E. Pencille, of Kendall, Pa. It is a lever mechanism combined with a piston and crank shaft, a short piston movement being made to operate a crank of much greater length, to give increase of leverage and power, the device being especially designed for use in connection with a steam engine, and generally applicable for converting rectilinear into rotary motion.

A boot or shoe has been patented by Mr. John Hansen, of Maryville, Mo. The upper is formed of three layers, the middle one consisting of oil tanned and crimped bladder; the bottom edge of the upper layer is turned outward to form a second welt, on which the usual welt is placed, and then sewed to the upper, and at the same time is sewed to the sole with the upper, the counter being placed on the outside of the back leather, and a back stiffener over it, which extends above the counter and over the side seams.

A coffee and tea pot stand has been patented by Mr. Charlie Gracey, of Summit, Miss. It is made to hold the pot securely, and facilitate tilting it, a basket being pivoted between two standards, with slots in the rear and front of the basket for receiving the spout and the handle of the pot, and with apertured lugs through which a pin can be passed, which is also passed through the pot handle to keep the pot in place, while a lamp can be held in the cross piece of the standards.

A guide setter for sewing machines has been patented by Cornelia T. Freeman, of Elizabeth, N. J. The graduated plate has a pivoted pointer for designating the position of the cloth guide, so in case the work is suspended, and the machine used for other stitching, the guide may be easily and accurately readjusted to resume work; the graduated plate also has a stud on its under surface to enter an orifice in the cloth plate for insuring the proper parallelism of plate and cloth guide with the feed of the machine.

NEW BOOKS AND PUBLICATIONS.

TUNNELING UNDER THE HUDSON RIVER. By S. D. V. Burr. Twenty-seven Plates. John Wiley & Sons, New York. Price \$2.50.

Although work on this great enterprise has been suspended since July 20, 1883, there are probably as many who are confident of the final success of the Hudson River tunnel (to connect New York and Jersey cities) as there were, in all the early years of the undertaking, that the East River Bridge would be completed. There have been, altogether, some 2,500 feet of the tunnel actually built, at a cost of about \$1,100,000, and, at the rate at which work was being pushed at the time of suspending operations, the whole tunnel could be completed, barring any further accident, in two and a half years. Just what has been done, with a description of the obstacles encountered, the experience gained, the success achieved, and the plans finally adopted for the most rapid and economical working, are lucidly described by Mr. Burr, while numerous plates of working drawings are given, which add to the value of the volume. The author's opportunities for thorough inspection were favorable from almost the very beginning of the enterprise. The general plans according to which the tunnel has thus far been built are new, and in this volume engineers have the opportunity of thoroughly understanding them.

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Notes & Queries

HINTS TO CORRESPONDENTS.

Names and Address must accompany all letters, or no attention will be paid thereto. This is for our information, and not for publication.

References to former articles or answers should give date of paper and page or number of question. Inquiries not answered in reasonable time should be repeated; correspondents will bear in mind that some answers require not a little research, and, though we endeavor to reply to all, either by letter or in this department, each must take his turn.

Special Information requests on matters of personal rather than general interest, and requests for Prompt Answers by Letter, should be accompanied with remittance of \$1 to \$5, according to the subject, as we cannot be expected to perform such service without remuneration.

Scientific American Supplements referred to may be had at the office. Price 10 cents each. Minerals sent for examination should be distinctly marked or labeled.

(1) K. A. R. asks how to tin or galvanize small iron castings. A. Clean the iron castings (or forgings) from scale, sand, and other adherent coating; dip them in a bath of muriatic acid and water—one part by measure of acid and four of water—and immerse them in a bath of melted zinc (spelter); no tin is required. Take them out, and violently shake off the dripping metal. Some use a dip of powdered resin after the acid bath, and before the immersion in the liquid zinc. Block tin melted may be used in the same way as zinc, if you prefer it to zinc.

(2) A. G. H.—The stars twinkle when the atmosphere is disturbed by unequal temperature or the commotion of strata of the atmosphere having different temperatures. You may see a fair illustration of the reality of this phenomenon by looking at a distant light across a hot stove. The twinkle of a star to the eye is the same as the dancing of the star in the field of the telescope, which Newton failed to mention. Stars have their hardest dances in the largest telescopes, when the condition of the atmosphere is favorable. Planets of large visual size do not appear to twinkle, but their telescopic definition is destroyed from the same cause that makes the stars twinkle to the eye or dance in the telescope.

(3) F. L. asks for information: 1. As to the process of canning fruit without being boiled, such as we see in the large groceries put up in large bottles? A. The processes of canning fruit when not dried all involve some sort of heating or partial cooking. The canners claim that there is nothing peculiar about it. With experience there comes a certain amount of skill which cannot be imparted by furnishing receipts. 2. The method of ironing collars and cuffs in the Chinese style? A. The Chinese method of laundrying is given in answer to query 2 on page 330 of SCIENTIFIC AMERICAN, for May 26, 1883. 3. The composition of the baking powders by parts, that is, their ingredients? A. Take:

- Powdered cream tartar.....30 oz.
- Soda bicarbonate.....15 oz.
- Flour.....5 oz.

All well dried; mix thoroughly, and keep dry.

(4) W. S. asks if there was any substance or composition known which would form a glaze for pottery or baked earth, vitrifying at a low heat (between boiling water and melting lead). A. Perhaps the following will answer: Take 100 parts washed sand, 80 parts purified potash, 10 of niter, and 20 of slaked lime, all well mixed, and heated in a black lead crucible, in a reverberatory furnace, till the mass flows into a clear glass. The goods are to be slightly burnt, dipped in water, and sprinkled with the powder.

(5) W. C. M. asks: 1. Whether or not ordinary bricks expand when saturated with water; and if so, the most simple means of ascertaining the fact and demonstrating the same to an unbeliever? A.